REMARKS

Status of the claims

Claims 1-30 are currently pending in this application. No claims have been amended, canceled, or added by virtue of this response.

Claim Rejection under 35 U.S.C. §102(b)

Claims 1-30 are rejected under 35 U.S.C. §102(b) as allegedly anticipated by Kauvar et al. (U.S. Patent No. 5384263). Applicants respectfully traverse this rejection.

Kauvar et al. do not teach all of the elements of the currently-pending claims and thus do not anticipate the claimed invention. Claim 1, upon which all other claims in the application depend, is directed to a *set of at least about 15 digital antibodies*. Each digital antibody in the set binds an epitope consisting of 3 or 4 consecutive amino acids and each digital antibody in the set recognizes a plurality of proteins that comprise the epitope to which the antibody binds. Kauvar et al. do not teach a set of at least about 15 antibodies having these recited features.

Kauvar et al. teach methods for screening for antibodies suitable for use in immunoassays for an analyte of interest, and for mimotopes that may be used as competitors in an immunoassay or for immunization of a mammal to improve specificity and affinity of antibodies that recognize the analyte of interest. The Examiner states that this reference teaches that "epitope size can be up to 6 amino acid length, including 3, 4 and 5 consecutive amino acids (Col. 12, line 1-10)." Office Action, page 2. Applicants respectfully submit that the section of the reference referred to by the Examiner discusses an approach to "constructing a set of potential *mimotopes*" (Col. 11, lines 44-48, emphasis added), *not* a set of digital antibodies as claimed..

Kauvar et al. describe a mixture of mimotopes as "capable of mimicking, at least to a satisfactory degree, the *binding ability of the analyte*." Col. 11, lines 37-40, emphasis added. This

section of the reference also discusses "synthesis of 3-6 amino acid peptides of random sequence" (Col. 11, lines 49-52), *in the context of construction of mimotopes which mimic binding of the analyte*. "Mimotope" is defined by Kauvar et al. as "the portion of a molecule which has *complementarity to the antigen-binding region of an antibody* which binds immunospecifically to a desired antigen or analyte – i.e., in general that region which *corresponds to the epitope on the analyte*." Col. 5, lines 38-43, emphasis added. Thus, a mimotope is a binding site for an antibody. The present claims are directed to digital *antibodies*, not peptides recognized by the antibodies. Kauvar et al. fail to teach a set of at least about 15 *antibodies* that bind epitopes of 3 or 4 amino acids, as recited in the present claims.

The Examiner also states that "[w]ith respect to claim 5-8, 24 and 29-30, Kauvar et al. teach the set of antibodies can be from 10-10,000 (Col. 18, line 15-20)." Office Action, page 2. This section of the cited reference describes a matrix of 10-10,000 antibodies that are assayed for intensity of binding to an analyte of interest. However, there is no discussion or disclosure of a set *digital antibodies* as claimed that each binds an epitope consisting of 3 or 4 consecutive amino acids and each recognizes a plurality of proteins that comprise the epitope to which the antibody binds. Furthermore, nowhere does Kauver et al. teach a *set of antibodies* wherein each of the antibodies binds to a *different epitope*. Instead, Kauver et al. teach a set of antibodies that have low affinity to epitopes and that cannot specifically recognize one epitope. Specifically, Kauvar states that "[b]road specificity is an inherent property of randomly stimulated B-cells. These [antibody producing] clones produce mostly IgM immunoglobulins." Such immunoglobulins do not have the same characteristics as the digital antibodies claimed herein.

The Examiner further states that "with respect to claim 9-11, Kauvar et al. teach immobilizing the antibodies on solid support in an array for analysis (See Example)." Office Action, page 2. The Examiner does not state which Example he is referring to. Applicants respectfully submit that none of the examples of Kauvar et al. teach a set of digital antibodies as claimed. Example 1 teaches preparation of a panel of *antibody-secreting immortalized cells* produced from an activated BALB/c mouse spleen. Example 2 teaches *preparation of panels of hybridoma cultures* on supported agarose. Example 3 teaches synthesis of a diverse *mimotope*

panel. Example 4 teaches effectiveness of *labeled mimotope as a competitor* for binding of antibodies to analytes. Example 5 teaches synthesis of *nonapeptides* and testing of these peptides for binding to an arbitrarily chosen monoclonal antibody. Thus, none of these examples teaches a set of digital antibodies as claimed.

The Examiner also states that "[with] respect to claim 13 and 27, Kauvar et al. teach treating samples with cleavage agents, such as trypsin, or collagenase (Col. 12, line 14-18)." Office Action, page 2. The section of Kauvar et al. referred to by the Examiner discusses construction of mimotopes by "hydrolysis of protein mixtures found in nature" as an alternative to randomly constructed mimotopes. Claims 13 and 27 recite treatment of a sample with a protein cleaving agent prior to contact with a set of digital antibodies as claimed. In contrast, Kauvar et al. teach cleavage of a sample for the purpose of mimotope preparation, and do not teach contacting of cleaved proteins in a sample with a set of digital antibodies as recited in the present claims.

The Examiner states that "[with] respect to claim 14, 17-22, Kauvar et al. teach storage of binding profiles of target analyte for comparison in order to identify analyte (Col. 22, line 1-15)." Applicants submit that this section of the cited reference does not teach a set of at least about 15 digital antibodies as claimed, each binding an epitope consisting of 3 or 4 consecutive amino acids and each recognizing a plurality of proteins that comprise the epitope to which the antibody binds. Furthermore, nowhere does Kauvar et al. teach a method for generating a protein binding profile or a library of a plurality of protein binding profiles as recited in claims 12 and 14 using the set of digital antibodies of Claim 1. In addition, Kauvar et al does not teach a method for characterizing a test sample or identifying bacteria, virus, or cell as recited in claims 17 and 21 using the set of digital antibodies as described in Claim 1.

As discussed above, Kauvar et al. do not teach the elements of the present claims and thus this reference does not anticipate the claimed invention. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §102(b).

CONCLUSION

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, Applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 559312000100. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

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